



**VIU**  
**PhD**  
**academy**  
**LIGHT:**  
**ITS NATURE**  
**AND ITS USE**

**Light: Its Nature and Its Use**

**May 3-7, 2021**

**Venice International University**  
**Isola di San Servolo, Venice**

# VIU International PhD Academy

## **Light: Its Nature and Its Use**

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Venice International  
University

Scientific coordinators:

Lionel Canioni,  
Brahim Lounis,  
Laurent Servant,

University of Bordeaux  
(France)

This program is a VIU Global  
Challenges Initiative

Light: its nature, its use, its production, its detection, its modes of interaction with matter, its effects on the environment have always been the focus of attention in various fields ranging from Art and Architecture to Physics, Biology and Health sciences. The study of light gave birth to modern physics and generated technological revolutions in the 20th Century. Based on the photon concept introduced by Albert Einstein in 1905, the invention of the laser in 1960 paved the way for new research domains in optics and photonics with the consequence that the properties of light can now be manipulated on a much wider scale. Since that date, more Nobel Prizes in Physics and Chemistry have been awarded in light-related topics than any other fields.

Light Related Technologies have a fundamental capacity to transform processes and products as well as the potential to lead to breakthrough innovations in many different application areas ranging from manufacturing, ICT, lighting & energy to healthcare, security and environmental protection. The 21st Century is frequently termed the "century of light". Light sciences and technologies drive research in physics, chemistry, biology and engineering. It is often said that, "if technology in the 20th century was led by the discovery of the electron and the development of electronics, then the 21st century will be led by technologies relying on photons and the development of photonics".

This PhD Academy aims at giving a broad overview of modern optics and its applications (*i.e.* photonics) in various fields, involving the exploration of matter, the design of original devices involving light (*e.g.* imaging and medical set-ups, optical communications) and their applications in analytical sciences (microscopy, spectroscopies), healthcare, manufacture, arts.

The program will concentrate on the transversality of the issues addressed and emphasizes how the various perspectives to use light have enhanced creativity and innovation of the design of new devices based on light-matter interaction and have contributed to a better understanding of the physical phenomena underlying these effects.

This PhD Academy is led by:

- University of Bordeaux, France
- Institut National de la Recherche Scientifique, Canada
- Ludwig Maximilians Universität, Germany

### Faculty

Laurent Servant, University of Bordeaux  
Lionel Canioni, University of Bordeaux  
Brahim Lounis, University of Bordeaux  
Jean-Claude Kieffer, Institut National de la Recherche Scientifique  
François Légaré, Institut National de la Recherche Scientifique  
Stefan Maier, Ludwig Maximilians Universität  
Paolo Proposito, Tor Vergata University of Rome  
Maarten Roeffaers, KU Leuven  
Alessandro Farini, National Research Council of Italy  
Fabio Peron, Iuav University of Venice

### Topics

- **History of light and light imaging**
- **Light and healthcare**
- **Extreme light: low and high energy light**
- **Technology of light: nano-photonics and photonics devices**
- **Art and light**
- **Role of light in augmented reality**
- **Light in urban planning**
- **Security and environmental protection**

The program also includes a parallel program of training in a range of **Transversal Skills** for developing participants' academic careers and **poster sessions** to present their research projects.

### Who can apply?

This PhD Academy is offered to PhD students, post-docs and young researchers with background in sciences, physics, chemistry, biology, health sciences, art and architecture, archeology.

This PhD Academy is a postponed 2020 activity. Applications are currently closed, however, should any places become available, a new call for applications will open on December 5, 2020. [Updated information will be available on the dedicated webpage.](#)

### Fees & Grant Support

Students from the VIU member universities will pay no participation fees. Grant support is also available to support, partially or fully, the costs of international travel and accommodation.

The participation fee for students of non-member universities is Euro 1.100,00 VAT incl. The fee is inclusive of tuition, course materials, accommodation, lunches, social events and taxes). Students from non-member institutions are not eligible for VIU grant support. VIU Alumni are eligible for a reduced fee.

Selected participants will be asked to present a poster.

*As the COVID-19 pandemic is ongoing, VIU will continue to monitor the situation, and in the event that it is not possible to confirm the program on the VIU campus as scheduled, other practicable solutions will be evaluated. Applicants and confirmed participants will be informed of any changes.*

## **VIU International PhD Academies**

Venice International University is a consortium of 20 universities, representing 15 countries throughout the world.

The mission of VIU is to foster cooperation among VIU member institutions while facilitating the exchange of knowledge and ideas, by developing, promoting and organizing joint academic, research and training/capacity-building program. Students from non-member universities may participate in selected academic programs. The academic programs at VIU are distinguished by a markedly interdisciplinary approach to the topics, and by the international perspectives that the participants contribute to the discussions. The VIU campus is on the island of San Servolo in Venice, Italy.

Venice International University holds two International PhD Academies each year. They are intensive training opportunities open to PhD candidates from the member universities of VIU.

A PhD is the highest diploma awarded by universities in the world, and PhDs are naturally expected to take on major responsibilities in their professional life. Apart from the disciplinary scientific skills acquired during doctoral study and research, it is the ability to respond to the requirements of creativity, innovation and project management, that produce the significant added value of a doctoral degree.

Whether they will work within or outside academia, PhDs must be able to develop a forward-looking vision of the challenges they have to face. The interdisciplinary approach of all VIU activities is adopted also in the PhD Academy, where the participants have the opportunity to meet their peers from all over the world, and to tackle transversal topics.

[www.univiu.org/study/phd-academy](http://www.univiu.org/study/phd-academy)

## **Location**



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